Appendix Table 9. Preliminary small-plot yield response to liquid swine manure and fertilizer application from each demonstration site, 2002.

2002 Swine Manure Nutrient Utilization Project
N Fertilizer CORN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate targets: (before corn) Low = 75 lb N/ac, High = 150 lb N/ac; (before SB) Low = 100 lb N/ac, High = 200 lb N/ac.

[2] Blanket fertilizer application of 60 lb P_2O_5/acre and 60 lb K_2O/acre applied to fertilizer N rate small-plot area.

[3] Late-Spring soil NO_3^--N (LSNT) values offer a soil sample-based estimate of plant-available soil NO_3^--N in the top foot of soil when corn is 6-12 in. tall.

[4] SPAD chlorophyll meter readings measure relative corn ear leaf greenness when corn is near R1 growth stage. Larger values = greener leaves.

[5] End-of-season cornstalk test measures NO_3^--N in the lower stalk at physiological maturity. Larger values suggest greater plant NO_3^--N avail. "BDL" is < 20 ppm.

Field sites with liquid swine manure applied before 2002 corn crop (first-year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure			Fertilizer N Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre)[2]				Fertilizer N Rate (lb/acre) Effect on Late-Spring Soil NO_3^--N (ppm)[3]				Fertilizer N Rate (lb/acre) Effect on SPAD Chlorophyll Meter Readings at R1 Stage[4]				Fertilizer N Rate (lb/acre) Effect on End-of-Season Cornstalk NO_3^--N (ppm)[5]			
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Davis	Bloomfield	Check	0	0	0	93	107	131	141	5	- - -	21	- - -	36	43	49	51	BDL	BDL	BDL	BDL
"Corn after SB" field site		P-48	70	48	48	124	138	165	173	9	- - -	20	- - -	45	49	57	58	BDL	BDL	BDL	215
Manure injected 04/05/2002		N-153	159	109	109	156	173	186	185	14	- - -	26	- - -	58	57	60	60	BDL	BDL	74	432
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Hamilton	Stanhope	Check	0	0	0	185	184	199	191	13	- - -	29	- - -	56	59	60	61	707	730	2075	1985
"Corn after SB" field site		Low[1]	94	38	64	187	195	193	209	16	- - -	34	- - -	59	59	60	61	175	586	2266	3063
Manure injected 11/20/2001		High[1]	188	76	128	188	189	204	211	19	- - -	45	- - -	58	61	61	59	765	2397	3857	3961
			N	P_2O_5	K_2O	0	60	120	180	0	60	120	180	0	60	120	180	0	60	120	180
Hardin	Iowa Falls	Check	0	0	0	104	143	202	199	5	- - -	24	- - -	41	52	56	57	50	68	241	1739
"Continuous Corn" field site		P-60	67	35	62	159	186	228	222	5	- - -	34	- - -	52	57	59	59	BDL	939	4263	4020
Manure injected 11/06/2001		N-190	158	84	148	195	193	217	230	12	- - -	32	- - -	56	56	58	58	82	1866	4418	4955
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Washington	West Chester	Check	0	0	0	136	173	218	228	4	- - -	18	- - -	43	49	54	55	31	BDL	BDL	54
"Corn after SB" field site		Low	119	82	74	215	233	247	248	9	- - -	27	- - -	57	60	59	59	134	444	2038	3142
Manure injected 11/12/2001		High	238	165	147	238	245	258	262	12	- - -	30	- - -	57	59	59	59	899	1813	2887	4773

Appendix Table 9 continued. Preliminary small-plot yield response to liquid swine manure and fertilizer application from each demonstration site, 2002.

2002 Swine Manure Nutrient Utilization Project
N Fertilizer CORN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate targets: (before corn) Low = 75 lb N/ac, High = 150 lb N/ac; (before SB) Low = 100 lb N/ac, High = 200 lb N/ac.

[2] Blanket fertilizer application of 60 lb P_2O_5/acre and 60 lb K_2O/acre applied to fertilizer N rate small-plot area.

[3] Late-Spring soil NO_3^--N (LSNT) values offer a soil sample-based estimate of plant-available soil NO_3^--N in the top foot of soil when corn is 6-12 in. tall.

[4] SPAD chlorophyll meter readings measure relative corn ear leaf greenness when corn is near R1 growth stage. Larger values = greener leaves.

[5] End-of-season cornstalk test measures NO_3^--N in the lower stalk at physiological maturity. Larger values suggest greater plant NO_3^--N avail. "BDL" is < 20 ppm.

Field sites with liquid swine manure applied before 2001 soybean crop (residual year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure			Fertilizer N Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre)[2]				Fertilizer N Rate (lb/acre) Effect on Late-Spring Soil NO_3^--N (ppm)[3]				Fertilizer N Rate (lb/acre) Effect on SPAD Chlorophyll Meter Readings at R1 Stage[4]				Fertilizer N Rate (lb/acre) Effect on End-of-Season Cornstalk NO_3^--N (ppm)[5]			
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Clay	Rossie	Check	0	0	0	141	155	156	164	12	- - -	28	- - -	52	55	57	57	274	1657	2647	2770
"Corn after SB" field site		Low[1]	100	53	54	161	161	167	171	13	- - -	31	- - -	54	55	59	58	798	1897	2517	2813
Manure applied & inc. 05/15/01		High[1]	201	105	109	157	173	172	179	12	- - -	27	- - -	55	57	58	59	1007	2740	2990	3833
			N	P_2O_5	K_2O	0	40	80	120	0	40	80	120	0	40	80	120	0	40	80	120
Washington	West Chester	Check	0	0	0	142	168	208	220	3	- - -	13	- - -	45	50	52	56	BDL	BDL	BDL	230
"Corn after SB" field site		Low	114	68	61	125	169	196	224	3	- - -	9	- - -	41	49	53	56	BDL	BDL	BDL	76
Manure injected 04/19/2001		High	201	125	114	135	174	193	226	3	- - -	12	- - -	42	51	51	56	BDL	BDL	BDL	67

Appendix Table 9 continued. Preliminary small-plot yield response to liquid swine manure and fertilizer application from each demonstration site, 2002.

2002 Swine Manure Nutrient Utilization Project
P Fertilizer CORN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate (lb total N/acre) targets: (before corn) Low = 75, High = 150; (before SB) Low = 100, High = 200.

[2] Blanket fertilizer application of 150 lb total N/acre and 60 lb K_2O/acre applied to fertilizer P_2O_5 rate small-plot area.

[3] Effect of P fertilizer on early-season plant growth and plant P uptake was measured by sampling aboveground vegetation of 10 plants at V6 (6-leaf) growth stage.

[4] Initial and post-harvest 0-6 in. depth soil samples were collected to measure change in Bray-1 soil test P values (initial Bray-1 soil test P range: 12-17 ppm).

Initial Bray-1 soil test P range by site: Davis: 8-16 ppm; Hamilton: 11-42 ppm; Hardin: 24-53 ppm

Residual-year sites - Clay: 6-17 ppm; Washington: 9-18 ppm (both sites sampled Spring 2000)

Field sites with liquid swine manure applied before 2002 corn crop (first-year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure N	P_2O_5	K_2O	Fertilizer P_2O_5 Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre)[2] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants @ V6)[3] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Plant P Uptake (mg P/plant)[3] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm)[4] 0	20	40	60
Davis	Bloomfield	**Check**	**0**	**0**	**0**	**123**	**118**	**133**	**125**	**25**	**24**	**23**	**26**								
"Corn after SB" field site		**P-48**	**70**	**48**	**48**	**170**	**170**	**172**	**167**	**35**	**36**	**37**	**41**	**Data not available.**				**Data not available.**			
Manure injected 04/05/2002		**N-153**	**159**	**109**	**109**	**186**	**183**	**179**	**185**	**42**	**36**	**41**	**38**								
			N	**P_2O_5**	**K_2O**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**
Hamilton	Stanhope	**Check**	**0**	**0**	**0**	**194**	**192**	**200**	**191**	**21**	**21**	**23**	**23**								
"Corn after SB" field site		**Low[1]**	**94**	**38**	**64**	**196**	**198**	**197**	**203**	**26**	**28**	**27**	**28**	**Data not available.**				**Data not available.**			
Manure injected 11/20/2001		**High[1]**	**188**	**76**	**128**	**181**	**176**	**194**	**185**	**26**	**29**	**28**	**29**								
			N	**P_2O_5**	**K_2O**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**
Hardin	Iowa Falls	**Check**	**0**	**0**	**0**	**217**	**222**	**217**	**233**	**33**	**36**	**34**	**35**								
"Corn after SB" field site		**P-100**	**111**	**59**	**104**	**211**	**216**	**230**	**225**	**47**	**44**	**44**	**47**	**Data not available.**				**Data not available.**			
Manure injected 11/06/2001		**N-193**	**160**	**85**	**150**	**213**	**225**	**225**	**227**	**41**	**45**	**47**	**43**								

Field sites with liquid swine manure applied before 2001 soybean crop (residual year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure N	P_2O_5	K_2O	Fertilizer P_2O_5 Rate (lb/acre) Effect on Small-Plot Corn Yield (bu/acre)[2] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants @ V6)[3] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Plant P Uptake (mg P/plant)[3] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm)[4] 0	20	40	60
Clay	Rossie	**Check**	**0**	**0**	**0**	**167**	**165**	**166**	**168**	**26**	**29**	**27**	**32**								
"Corn after SB" field site		**Low[1]**	**100**	**53**	**54**	**164**	**171**	**168**	**169**	**30**	**32**	**39**	**37**	**Data not available.**				**Data not available.**			
Manure applied & inc. 05/15/01		**High[1]**	**201**	**105**	**109**	**174**	**177**	**174**	**174**	**32**	**33**	**31**	**35**								
			N	**P_2O_5**	**K_2O**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**	**0**	**20**	**40**	**60**
Washington	West Chester	**Check**	**0**	**0**	**0**	**210**	**206**	**207**	**223**	**25**	**28**	**28**	**28**								
"Corn after SB" field site		**Low**	**114**	**68**	**61**	**206**	**215**	**224**	**205**	**24**	**29**	**31**	**29**	**Data not available.**				**Data not available.**			
Manure injected 04/19/2001		**High**	**201**	**125**	**114**	**215**	**219**	**212**	**216**	**31**	**30**	**31**	**29**								

Appendix Table 9 continued. Preliminary small-plot yield response to liquid swine manure and fertilizer application from each demonstration site, 2002.

2002 Swine Manure Nutrient Utilization Project
P Fertilizer SOYBEAN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate (lb total N/acre) targets: (before SB) Low = 100, High = 200; (before corn) Low = 75, High = 150.

[2] Blanket fertilizer application of 60 lb K_2O/acre applied to fertilizer P_2O_5 rate small-plot area.

[3] Effect of P fertilizer on early-season plant growth and plant P uptake was measured by sampling aboveground vegetation of 10 plants at V6 (6-leaf) growth stage.

[4] Initial and post-harvest 0-6 in. depth soil samples were collected to measure change in Bray-1 soil test P values (initial Bray-1 soil test P range: 12-17 ppm).

Initial Bray-1 soil test P range by sit Floyd: 15-26 ppm; Hamilton: 12-47 ppm; Washington: 28-48 ppm;

Residual-year sites - Clay: 5-29 ppm; Floyd: 12-27 ppm; Hardin: 3-42 ppm;

Washington: 6-130 ppm; Wright: 18-53 ppm (all residual sites sampled Spring 2000)

Field sites with liquid swine manure applied before 2002 soybean crop (first-year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure N	P_2O_5	K_2O	Fertilizer P_2O_5 Rate (lb/acre) Effect on Small-Plot Soybean Yield (bu/acre)[2] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants @ V6)[3] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Plant P Uptake (mg P/plant)[3] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm)[4] 0	20	40	60
Floyd	Nashua	Check	0	0	0	60	60	59	60	10	10	5	10	Data not available.				Data not available.			
"SB after CORN" field site		Low[1]	147	103	112	58	59	59	62	10	10	11	11								
Manure injected 11/09/2001		High[1]	271	189	207	58	59	60	62	11	12	10	11								
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Hamilton	Stanhope	Check	0	0	0	45	38	37	43	19	15	18	19	Data not available.				Data not available.			
"SB after CORN" field site		Low	107	53	79	47	52	48	58	21	18	18	23								
Manure injected 11/21/2001		High	214	107	158	50	37	48	51	27	18	22	22								
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Washington	West Chester	Check	0	0	0	No small-plot evaluation at this site in 2002 (only strip treatment yield data collected).															
"SB after CORN" field site		Low	124	95	68																
Manure injected 11/16/2001		High	249	189	137																

Appendix Table 9 continued. Preliminary small-plot yield response to liquid swine manure and fertilizer application from each demonstration site, 2002.

2002 Swine Manure Nutrient Utilization Project
P Fertilizer SOYBEAN Small Plot Data Summary
Field sites listed alphabetically by county name.

[1] Manure strip trt. N-based application rate (lb total N/acre) targets: (before SB) Low = 100, High = 200; (before corn) Low = 75, High = 150.

[2] Blanket fertilizer application of 60 lb K_2O/acre applied to fertilizer P_2O_5 rate small-plot area.

[3] Effect of P fertilizer on early-season plant growth and plant P uptake was measured by sampling aboveground vegetation of 10 plants at V6 (6-leaf) growth stage.

[4] Initial and post-harvest 0-6 in. depth soil samples were collected to measure change in Bray-1 soil test P values (initial Bray-1 soil test P range: 12-17 ppm).

Initial Bray-1 soil test P range by sit Floyd: 15-26 ppm; Hamilton: 12-47 ppm; Washington: 28-48 ppm;

Residual-year sites - Clay: 5-29 ppm; Floyd: 12-27 ppm; Hardin: 3-42 ppm;

Washington: 6-130 ppm; Wright: 18-53 ppm (all residual sites sampled Spring 2000)

Field sites with liquid swine manure applied before 2001 corn crop (residual year manure treatment effect evaluation).

County	Field site (Nearby town)	Manure[1] Strip Trt.	Estimated Total Nutrients Applied (lb/acre) in Manure N	P_2O_5	K_2O	Fertilizer P_2O_5 Rate (lb/acre) Effect on Small-Plot Soybean Yield (bu/acre)[2] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Early Plant Growth (grams/10 plants @ V6)[3] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Plant P Uptake (mg P/plant)[3] 0	20	40	60	Fertilizer P_2O_5 Rate (lb/acre) Effect on Post-Harvest Bray-1 P Soil Test (ppm)[4] 0	20	40	60
Clay	Rossie	Check	0	0	0	Small plots abandoned after Oct. 1				Data not available.				Data not available.				Data not available.			
"SB after CORN" field site		Low[1]	71	35	38	hailstorm shattered soybean pods															
Manure applied & inc. 05/15/01		High[1]	142	70	77	throughout the field.															
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Floyd	Nashua	Check	0	0	0	58	60	56	59	8	8	9	9								
"SB after CORN" field site		Low	103	55	81	59	58	57	56	9	9	9	9	Data not available.				Data not available.			
Manure injected 04/27/2001		High	207	110	163	58	58	58	57	9	9	9	8								
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Hardin	Iowa Falls	Check	0	0	0	43	47	46	46	14	14	14	13								
"SB after CORN" field site		Low	115	91	75	44	49	44	48	12	13	12	12	Data not available.				Data not available.			
Manure injected 04/26/2001		High	192	152	124	49	48	46	49	13	13	14	14								
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Washington	West Chester	Check	0	0	0	36	38	37	35	17	15	16	18								
"SB after CORN" field site		Low	105	74	62	33	37	38	37	17	14	14	15	Data not available.				Data not available.			
Manure injected 11/10/2000		High	189	140	112	37	37	38	40	19	19	18	18								
			N	P_2O_5	K_2O	0	20	40	60	0	20	40	60	0	20	40	60	0	20	40	60
Wright	Dows	Check	0	0	0	42	49	40	45	27	28	27	25								
"SB after CORN" field site		Low	91	65	61	53	61	54	63	28	34	29	32	Data not available.				Data not available.			
Manure injected 04/29/2001		High	181	130	122	59	61	60	60	32	31	25	30								